

Application No. 10/715,414
Amendment dated November 16, 2007
Reply to Office Action of May 18, 2007

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Docket No.: 4459-0159P

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A digital controlled multi-light driving apparatus for driving and controlling a plurality of lights, comprising:

a plurality of oscillation step-up circuits; and

a digital control circuit, which has a digital switching signal generating circuit and a multiplex feedback-control calculating circuit, the digital switching signal generating circuit connects to each of the oscillation step-up circuits, generates sets of digital switching signals, and respectively transmits the sets of the digital switching signals to the oscillation step-up circuits, wherein a phase and a duty cycle of each set of the digital switching signals are controlled by the digital control circuit, the multiplex feedback-control calculating circuit has a control-calculating unit and an A/D converting unit, the control-calculating unit controls the digital switching signal generating circuit, and controls a phase and a duty cycle of each set of the digital switching signals generated by the digital switching signal generating circuit according to digital feedback signals from the A/D converting unit, the A/D converting unit converts feedback signals from the lights into the digital feedback signals, respectively,

wherein the oscillation step-up circuits are controlled according to the sets of digital switching signals, respectively.

2. (Original) The driving apparatus of claim 1, wherein each of the oscillation step-up circuits is electrically connected to at least one of the lights.

3. (Original) The driving apparatus of claim 1, wherein the lights are cold cathode fluorescent lamps (CCFLs).

4. (Original) The driving apparatus of claim 1, wherein each of the oscillation step-up circuits comprises a switching unit and a resonance step-up unit, the switching unit electrically connects to the digital control circuit and performs switching according to one corresponding set of the digital switching signals output from the digital control circuit, and the resonance step-up unit is controlled by the switching unit.

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5. (Original) The driving apparatus of claim 4, wherein the resonance step-up unit comprises a transformer and a capacitor.

6. (Original) The driving apparatus of claim 5, wherein the switching unit comprises two transistors, the transistors electrically connect to the two ends of the capacitor, respectively, and the transistors are turned on/off according to the corresponding set of the digital switching signals.

7. (Original) The driving apparatus of claim 6, wherein the transistors of the switching unit are MOS transistors.

8. (Original) The driving apparatus of claim 6, wherein the transistors of the switching unit are bipolar transistors.

9. (Original) The driving apparatus of claim 8, wherein the switching unit further comprises two resistors, one end of each of the resistors electrically connects to the base electrode of each corresponding transistor, respectively, and the other end of each of the resistors electrically connects to the digital control circuit.

10. (Cancelled)

11. (Currently amended) The driving apparatus of claim ~~10~~ 1, wherein the multiplex feedback-control calculating circuit is a digital single-chip microprocessor.

12. (Currently amended) The driving apparatus of claim ~~10~~ 1, wherein the multiplex feedback-control calculating circuit comprises:

a multiplex unit, which electrically connects to each of the lights;

a detecting unit, which electrically connects to the multiplex unit to detect the feedback signals from the lights,

wherein the an A/D converting unit converts the feedback signals into digital feedback signals, ~~respectively; respectively,~~ and

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~~the a-control-calculating unit, which~~ controls the multiplex unit, and further controls the digital switching signal generating circuit according to the digital feedback signals.

13. (Currently amended) The driving apparatus of claim ~~10~~ 1, wherein the multiplex feedback-control calculating circuit comprises:

a plurality of detecting units, which electrically connect to the lights and detect the feedback signals respectively input from the lights; and

a multiplex unit, which electrically connects to each of the detecting ~~units~~; units, wherein
the an-A/D converting unit, ~~which~~ electrically connects to the multiplex unit and converts the feedback signals into digital feedback signals, ~~respectively; and respectively~~

~~the a-control-calculating unit, which~~ controls the multiplex unit, and further controls the digital switching signal generating circuit according to the digital feedback signals.

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Currently amended) The driving apparatus of claim ~~10~~ 1, wherein the feedback signals are current signals.

19. (Currently amended) The driving apparatus of claim ~~10~~ 1, wherein the feedback signals are voltage signals.

20. (New) The driving apparatus of claim 13, wherein the multiplex unit, the A/D converting unit, the control-calculating unit are integrated in a digital single-chip microprocessor.

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21. (New) The driving apparatus of claim 13, wherein the A/D converting unit, the control-calculating unit are integrated in a digital single-chip microprocessor.